



University of Nebraska at Omaha
DigitalCommons@UNO

Student Work

8-1989

The effects of feedback referent and content upon self-determination, rated task interest, and intrinsic motivation

Kerry L. Sheehan

University of Nebraska at Omaha

Follow this and additional works at: <https://digitalcommons.unomaha.edu/studentwork>

 Part of the [Psychology Commons](#)

Recommended Citation

Sheehan, Kerry L., "The effects of feedback referent and content upon self-determination, rated task interest, and intrinsic motivation" (1989). *Student Work*. 83.

<https://digitalcommons.unomaha.edu/studentwork/83>

This Thesis is brought to you for free and open access by DigitalCommons@UNO. It has been accepted for inclusion in Student Work by an authorized administrator of DigitalCommons@UNO. For more information, please contact unodigitalcommons@unomaha.edu.



THE EFFECTS OF FEEDBACK REFERENT AND CONTENT UPON
SELF-DETERMINATION, RATED TASK INTEREST,
AND INTRINSIC MOTIVATION

A Thesis
Presented to the
Department of Psychology
and the
Faculty of the Graduate College
University of Nebraska

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
University of Nebraska at Omaha

by
Kerry L. Sheehan
August 1989

UMI Number: EP72730

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI EP72730

Published by ProQuest LLC (2015). Copyright in the Dissertation held by the Author.

Microform Edition © ProQuest LLC.

All rights reserved. This work is protected against unauthorized copying under Title 17, United States Code



ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

THESIS ACCEPTANCE

Accepted for the faculty of the Graduate College,
University of Nebraska, in partial fulfillment of the
requirements for the degree Master of Arts, University of
Nebraska at Omaha.

Committee

<u>Wayne Harmon</u>	<u>Psychology</u>
Name	Department

<u>James Thomas</u>	<u>Psychology</u>
---------------------	-------------------

<u>Doug Cellar</u>	<u>Psychology</u>
--------------------	-------------------

<u>Low Polak</u>	<u>Marketing</u>
------------------	------------------

<u>Wayne Harmon</u>
Chairman

<u>7/21/89</u>
Date

ACKNOWLEDGEMENTS

I gratefully acknowledge the support and assistance provided by these committee members: Dr. Wayne Harrison, Dr. James Thomas, and Dr. Louis Pol. Additionally, the cooperation and support of Dr. Douglas Cellar proved invaluable, and was appreciated.

I would also like to thank Dr. Richard Ryan who supplied copies of the puzzle materials, not to mention his crucial role in the development of background research on this topic. Thanks are due to Nicholas Mills for providing copies of the experimental materials, and to Alan Salo and John Klaric for their advice concerning text formatting. Additional thanks to Bob Day and Joyce Crockett in computer services for their advice concerning formatting options.

The greatest thanks are directed to my wife, Tamera, whose belief in my efforts supersedes my expectations.

This volume is dedicated to the memory of George O. Hutson

Abstract

This study was an attempt to determine if verbal feedback could be used to convey information about feedback referent and feedback content to individuals in an experimental setting, and if so, if that information would influence their perceptions of perceived task competence, self-determination, task-interest, and intrinsic motivation. Eighty subjects were used from psychology classes. The majority were college freshmen or sophomores. Results showed that subjects did attend to the feedback referent, but that the referent had no subsequent influence on any of the dependent variables. Additionally, the feedback content manipulation did not produce the predicted effects upon the dependent variables. Problems with the design of the feedback manipulation were responsible for the lack of conclusive results.

TABLE OF CONTENTS

ACCEPTANCE	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	vi
INTRODUCTION	1

Chapter

I	LITERATURE REVIEW	4
	History of Intrinsic Motivation Research	4
	Appraisal in the Undermining Effect Paradigm	6
	Cognitive Evaluation Theory	7
	History of Cognitive Evaluation Theory	10
	The Role of Perceived Competence	11
	The Role of Self-Determination	12
	Recent Developments in CET Research	15
	Purpose of the Study.	28
	Hypotheses	29
II	METHOD	30
	Design.	30
	Subjects	30
	Task	31
	Pretest	32
	Independent Variables	32
	Dependent Variables	34
	Manipulation Checks	36

	Procedure	36
III	RESULTS	40
	Reliability of Dependent Measures	40
	Manipulation Checks	41
	Tests of Hypotheses	44
	Correlation Analysis	50
IV	DISCUSSION	51
REFERENCES	58
APPENDICES	66

INTRODUCTION

A great deal of attention has been directed towards the study of intrinsic motivation over the past several years. Initially the research was focused upon findings that an intrinsically motivating task could be rendered less intrinsically motivating if the subject performing that task were subsequently rewarded with some external reward. This phenomenon became known as the "undermining effect" since the initial intrinsic motivation was considered to be "undermined" by the extrinsic rewards.

The definition of intrinsic motivation as a concept varies with respect to the theoretical approach under consideration. A majority of theorists find it helpful to consider intrinsic motivation via the operational definition used in research. In the strictest sense, intrinsically motivated behaviors are those that are performed in the absence of any apparent external contingency (Deci & Ryan, 1980).

A conceptual definition of intrinsic motivation by Deci and Ryan (1980) states that intrinsically motivated behaviors are those that are motivated by the underlying need for competence and self-determination. This theoretical position has been widely accepted by most

researchers in the field to date, and it sets the groundwork for this experiment.

The purpose of this study was to determine the effects of both controlling/informational verbal feedback, and normative/idiographic verbal feedback on perceived self-determination and intrinsic motivation. A more general purpose of this study was to test Cognitive Evaluation Theory (CET) within the micro-analytic context of verbal feedback. This approach is of value since the vast majority of CET research has emphasized the contrast between tangible, contingent rewards and conditions of no external reward whatsoever (the classic "undermining effect" paradigm). Many real world task situations do not involve the use of contingent tangible rewards, but instead are evaluated using informal performance feedback information from supervisors. It would be valuable and interesting to determine how verbal task feedback itself might influence an individual's perceptions of self-determination and perceptions of intrinsic or extrinsic motivation.

Chapter I contains a brief review of the relevant literature to familiarize the reader with the background of CET and emphasize its importance in intrinsic motivation research. Another segment of the literature

review focuses upon recent findings which have a bearing upon this study. Finally, the literature review closes with some pertinent methodological considerations which need to be addressed due to their bearing upon the construction of the current experimental procedure.

Chapter II consists of the experimental method in detail as it was actually employed with subjects. It contains necessary information about subjects, variables to be manipulated, and dependent variable measures.

Chapter III is a presentation of the results, and these results are discussed in Chapter IV.

Chapter I

Literature Review

History of Intrinsic Motivation Research

Initially it was assumed that intrinsic and extrinsic reward mechanisms had cumulative motivational effects. In 1971 Deci published the results of an experiment which showed that these two processes do not operate in an additive fashion. Instead it was found that subjects who performed a task which was initially highly intrinsically motivating would find the same task less intrinsically motivating after having received some form of external reward. This finding has been replicated by numerous researchers using diverse subject populations (Kruglanski, Freedman, & Zeevi, 1971; Lepper, Greene, & Nisbett, 1973; Ross, 1975; Karimol & Ross, 1977; Pritchard, Campbell, & Campbell, 1977).

This phenomenon has come to be known as the "undermining effect" because individuals who initially perform a task to experience the task as enjoyable in and of itself may subsequently experience decrements in intrinsic motivation to perform that task upon the introduction of external incentives/rewards. This decrease in motivation may be measured either behaviorally using a

free-choice period, or psychometrically using any of a number of scales which have been created to measure intrinsic motivation or related constructs such as task satisfaction or task enjoyment. Intrinsic motivation as a construct is somewhat tenuous, and as a result it is usually depicted in terms of its operational definition for experimental purposes. Most researchers believe that intrinsic motivation is a psychological force that guides behavior in the absence of any external rewards or expected outcomes. This "definition" obviously does not define intrinsic motivation so much as what it is, but rather more as what it is not, and as such is not really a definition at all. Beyond the operational definition used in experimentation, researchers still disagree about what intrinsic motivation actually is. A good review of this dilemma is provided in a dissertation by Mayo, 1977.

Cognitive Appraisal in the Undermining Effect Paradigm

Individuals who receive salient externally mediated incentives upon performance of a task will appraise that performance as a means to attain that outcome. Thus, their behavior will be guided by their perceptions that the outcome is contingent upon that specific level of performance. Elements in the situation are critical determinants of the type of cognitive appraisal that a

subject will make. If the task situation emphasizes the externally mediated outcomes, then the task will be appraised as a means to some end. Otherwise, if externally mediated outcomes are not made salient, it is likely that the task will be seen as valuable in and of itself (Lepper & Greene, 1975).

Early theorizing on the undermining effect arose from the attributional approach. This approach suggests that subjects make post-behavioral attributions about the causes of their behavior upon first observing that behavior. Self-Perception theory (Bem, 1972) is an attributional approach which has been applied in an attempt to explain the undermining effect. Utilizing this framework, the subject would receive external rewards before any inferences to motives would be made. Then the subject would infer an external cause for his behavior, and logically would not attribute the behavior to internal causes. Problems with this approach have become apparent. These problems are highlighted in the debate between Lepper & Greene (1976), and Reiss & Sushinsky (1975). At the time that the attribution theory approaches were being tested to explain the undermining effect, Deci and Ryan developed Cognitive Evaluation Theory which has become the dominant theoretical explanation for the undermining

effect. This approach readily generalizes to a variety of intrinsic motivation phenomena attribution theory could not explain (Deci, 1975; Deci & Ryan, 1980; Deci & Ryan, 1985).

Cognitive Evaluation Theory

Deci (1975), while drawing upon the Self-Perception and Dissonance approaches to the undermining of intrinsic motivation by the introduction of externally mediated outcomes, criticizes the temporal sequence implied in this approach. First, he maintains that it is not necessary to hypothesize that the cognitive appraisal occurs exclusively after the behavior. Instead he proposes in CET that individuals continually scan the performance situation for cues even before beginning a task, and continue to scan during task performance. He maintains that salient cues provide information about reward or lack of it, and about instrumentality (degree to which performance will lead to the valued reward outcome). An additional component of Deci's theory is that two distinct motivational subsystems exist, the intrinsic and extrinsic. The extrinsic motivational subsystem represents an established cognitive set invoked when the task is perceived as instrumental to achieving a specific externally mediated outcome. The intrinsic motivational

subsystem represents an established cognitive set which will be invoked in the absence of any salient cues indicative of specific performance-dependent, externally-mediated outcomes. Thus, when this subsystem is invoked, interest in the task will be seen as the motivational agent.

Deci (1975) views the undermining of intrinsic motivation in the following manner. The individual perceives a task situation as both challenging (de Charms, 1968) and interesting. The subsequent introduction of an externally mediated (and performance contingent) outcome (e.g., a monetary reward), may add salient information about self-determination. If it does, this information can alter self-determination perceptions in the subject, creating perceptions of external control over the situation. According to CET, the subject's perception of a loss of control over the task situation will induce a shift from the intrinsic motivational subsystem to the extrinsic motivational subsystem, (i.e. from perceived value of the task itself, to the task as a means to some valued externally mediated outcome). Deci postulates that once an intrinsically motivating task is paired with some salient control mechanism (be it verbal or tangible rewards, or performance constraints), that task will come

to be associated with that external control mechanism. Subsequent introduction of that task will cause the subject to expect the associated external control mechanisms, and as a result, initial intrinsic motivation for that task should be undermined (Deci 1982).

History of Cognitive Evaluation Theory

In Deci and Ryan's many writings about intrinsic motivation, they repeatedly emphasize the importance of two factors in the experience of intrinsic motivation. First they draw upon the work of White (1959) which suggests that organisms are driven by an effectance motivation. White describes this as an innate motivational force which drives people to seek an optimal level of environmental incongruence. de Charms (1968) describes this optimal incongruence as a preferred level of challenge such that the task is neither impossibly difficult to master, nor too easy to master, which would lead to boredom or disinterest. This search for optimality causes the organism to attempt to behave in a manner which will lead to the control or conquest of a task having the preferred level of incongruence.

This line of reasoning is built directly upon the earlier work of Piaget (1952) and was further elaborated upon by Hunt (1965). White (1959) extends this notion of optimal incongruence by suggesting that it is an internal cognitive motive within all organisms. White first applied the term "competence" to represent the internal satisfaction derived from these attempts to expand and solidify one's control over his/her environment.

The Role of Perceived Competence

Several points must be made about the role of perceived competence in CET. First, it is widely accepted by researchers that perceived competence perceptions alone do not determine the intrinsic motivation of subjects. CET recognizes both perceived competence and perceived self-determination in combination as the basis of intrinsic motivation within individuals (Phillips & Lord, 1980).

Secondly, when the classic intrinsic motivation paradigm is applied experimentally, it sometimes occurs that the introduction of the reward manipulation does not decrease the measured intrinsic motivation of the participants. An explanation for this finding is that subjects who continue to find the task intrinsically motivating may perceive the given reward to be relatively non-salient. It has been suggested that the way the subject construes the reward can be a factor. Some subjects may use the reward as an indication of their level of task competence, rather than perceiving the reward as controlling. For a thorough account of the effects of controlling rewards and/or feedback on competence and self-determination, see Deci and Ryan, 1980. It has been shown experimentally that the way a

reward is presented may affect the salience of its information value or its influence as a control factor (Ryan, Mims, & Koestner, 1983). This explanation has been proposed to account for experiments in which the undermining effect failed to surface. As a result of these findings, researchers suggest that verbal feedback used to induce decrements in intrinsic motivation should contain salient controlling or evaluative components, and should be of sufficient magnitude to be perceived as salient and important (Ryan, 1982).

The Role of Self-Determination

The other major cognitive antecedent that Deci & Ryan (1980) recognize as underlying intrinsic motivation is perceived self-determination. As a construct, self-determination has been associated with perceived locus of causality and can be measured using a locus of causality scale as long as the scale is modified to guide the subjects to respond to a task-specific or a performance-specific point of reference. A task-specific causality measure can vary along a continuum anchored on one end by external and on the other internal. Locus of causality represents the subject's perception of his/her own personal control over a situation or task performance, internals perceiving the cause to be from within, and

externals perceiving the cause to be from outside of themselves (de Charms, 1968). Deci (1975) considers subject's perceptions of self-determination to be the most critical of the two antecedents to intrinsic motivation experiences. Drawing upon the work of de Charms (1968), Deci proposed that to experience intrinsic motivation a subject must perceive some degree of self-determination for his/her own behavior. Thus, a subject who perceives his task performance to be caused by factors within himself will feel responsible for that behavior and will possess one of the necessary preconditions for the experience of intrinsic motivation. Should the contrary occur, and the subject perceives his or her task performance to be coerced or controlled in some manner, that subject will not perceive the necessary feelings of personal causation with respect to that task performance, and consequently will lack one of the necessary preconditions to experience intrinsic motivation (Deci & Ryan, 1980).

With this groundwork set, many theorists have attempted to resolve the question of what factors determine an individual's perception of these two necessary antecedent cognitions to intrinsic motivation. To this end a tendency has developed to focus research

efforts upon analysis of the situational variables within an experimental setting which affect the subject's perceptions of competence and self-determination.

A substantial body of literature has been generated dealing specifically with situational factors which affect the perception of both competence and self-determination in the experimental setting. Additionally, the relationship between these two factors has been clarified in recent years. The remainder of this review focuses on research concerning the use of verbal feedback in the undermining effect paradigm and on research delineating the interactive nature of perceived self-determination and perceived self-competence.

Recent Developments in Intrinsic Motivation Research

In an effort to expand the scope of CET, a number of researchers have extended its applications outside the initial paradigm used by Deci and Ryan. One of the first variations in the experimental paradigm was to determine if control mechanisms other than external, tangible rewards could also alter subject's perceptions of personal causality and ultimately lead to the undermining of intrinsic motivation.

Research by Swann & Pittman (1977) conducted on children still utilized external rewards, but included verbal cues to alter subject's perceptions of reward contingency. For some subjects verbal cues made the performance-reward contingency salient, while other subjects did not receive cues highlighting this relationship. Subjects receiving verbal cues making rewards performance-contingent experienced greater decrements in intrinsic motivation, as CET would predict. The outcome of this experiment was important in that it showed that verbal cues can moderate the effects of intrinsic motivation in the classic undermining effect paradigm.

In 1978, Dollinger and Thelen studied the effects of four distinct types of rewards on the undermining of children's intrinsic motivation. They explored tangible, verbal, symbolic, and self-administered rewards. Their research suggested that each type of reward possesses an inherent degree of control and that a hierarchy of rewards exists with respect to their degree of control. Thus tangible rewards were perceived as the most controlling, and caused the greatest reduction of intrinsic motivation. This finding fits well with Deci's contention that rewards vary on a continuum with respect to their perceived control or information value (Deci, 1975). To put it simply, rewards may be perceived as controlling if they offer little information concerning actual performance, and are made to be salient. Verbal and symbolic rewards convey information by their very nature and are inherently less salient as control agents.

In 1980 Mossholder examined the role of goal setting in intrinsic motivation. He found that subjects working on an interesting task would experience deficits in intrinsic interest when given specific difficult goals from some external source. This research is interesting because it examined the source of the controlling feedback, contrasting externally-mediated goals with self-selected

ones. The results are important because they suggest that the subject's initial perceptions of task interest can moderate the effects of goal setting manipulations upon subject's measured levels of intrinsic motivation. Results showed that difficult, externally-mediated goals undermine intrinsic motivation for an interesting task, and that difficult externally-mediated goals may actually enhance intrinsic motivation on a boring task. Consequently we see that externally-mediated goals as a specific form of verbal behavior may also be perceived by subjects as having varying degrees of control or information value, and as a result may have an effect on the experience of intrinsic motivation. (A final note on this study is that it supports the lack of correspondence between quantity of task performance and level of intrinsic motivation, which is important to note since it highlights one reason why we do not use performance data as an indication of intrinsic motivation or lack thereof).

An in-depth analysis of the informational vs. controlling continuum was conducted by Pittman, Davey, Alafat, Wetherill, and Kramer in 1980. These researchers suggest that, "...it should be possible to modify the effects of tangible and verbal rewards by making salient either their informational or controlling aspects"

(p.228). To make these aspects salient, they created scripts designed specifically to induce perceptions of control or of information. Their results supported CET predictions, since persons induced to attend to the informational aspects of the rewards (tangible or verbal) did not exhibit decrements in subsequent measures of intrinsic motivation, while subjects induced to attend to controlling aspects of the rewards (tangible or verbal) did exhibit decrements. Pittman et al. (1980) conclude their analysis by stating that "...the theoretical analysis does imply that both increases and decreases in task interest with both tangible and verbal rewards should be possible, if sufficient differences in the power of the controlling and informational aspects can be created" (p. 232).

These research findings indicate that an experimenter can effectively manipulate subjects' perceptions along the controlling/informational continuum using verbal rewards or feedback.

The research reviewed to this point emphasizes efforts to show what antecedent factors inherent in rewards and feedback influence an individual's perceptions of control or of self-determination. Now that research by many sources has indicated the importance of salience,

performance constraints, perceived importance of task performance, etc. upon this relationship, we can now turn to the experimental findings supporting the hypothesized structure of CET.

Fisher (1978) conducted a study which supported the CET contention that intrinsic motivation consists of both self-competence and self-determination perceptions. She utilized performance constraints as a manipulation and discovered that these constraints attenuated the correlation between perceived self-competence and intrinsic motivation, a finding which led her to speculate that self-determination is necessary but not sufficient for the experience of intrinsic motivation. Phillips and Lord (1980) further clarified this relationship, finding that locus of causality (a measure of self-determination) is a moderator which determines whether or not competence information will lead to a corresponding shift in intrinsic motivation. Subjects who received competence feedback may or may not respond with shifts in intrinsic motivation, depending upon the intensity and salience of controlling content in the feedback. Subjects in the Phillips and Lord experiment who were induced to feel that they had little control over their task performance exhibited less correspondence between measured perceived

competence and measured intrinsic motivation. Conversely, subjects induced to feel that they had greater control over the task performance exhibited a significantly higher correspondence between these two variables.

Phillips and Lord (1980) suggested that personal competence feedback may itself affect subjects' perceptions of self-determination. They performed a hierarchical regression analysis on their data and found this to be the case. The presentation of information concerning personal competence did induce a measurable shift to an internal locus of control in the design used.

The research reviewed above clarifies the roles of personal competence and self-determination with respect to CET. It is clear that verbal feedback itself can affect changes in these variables. It is also clear that changes in these variables can induce shifts in intrinsic motivation. The next step in an analysis of verbal feedback effects on intrinsic motivation is to determine the relevant characteristics of verbal feedback.

Several characteristics of verbal feedback are important and need to be reviewed here, since they have a bearing on the purpose of this experiment. In 1979, Harackiewicz published a study which analyzed two feedback

conditions (no feedback and positive feedback) crossed with three reward conditions (no reward, task-contingent reward, and performance-contingent reward). Her results verified the hypothesis that performance-contingent, informational rewards would undermine intrinsic motivation more than would task-contingent informational rewards. Additionally, it was found that positive verbal feedback would lead to an overall increase in intrinsic motivation in all of the reward cells, regardless of the undermining effect. This study supported the idea that different types of verbal feedback could affect competence perceptions and perceptions of control above and beyond those effects contributed by non-verbal rewards. The Harackiewicz (1979) study was also valuable in presenting other approaches to the measurement of intrinsic motivation by utilizing such measures as the number of puzzles requested and the "volunteering questionnaire".

In 1985, Harackiewicz, Sansone, and Manderlink published a study which utilized several different types of informational feedback. The first condition utilized expectancy feedback, the second condition involved the presentation of an objective standard of average performance, and the third condition manipulated the presentation of normative feedback. Although the results

of this experiment are not applicable to the present study, the finding that the intrinsic motivation experience varies widely in individuals who differ in need for achievement suggests that some individuals use competence and self-determination information differently. This finding has opened up a new branch of CET research, analyzing the role of personality variables in the intrinsic motivation experience.

In the following year, Harackiewicz and Larson (1986) conducted a study which assessed both the manner in which supervisors would manipulate competence and self-determination in dealing with subordinates, and the way that subordinates would use this information. Independent variables included subordinate rewarded/not rewarded by supervisor, who was himself either rewarded or not rewarded. The results of this experiment showed that subordinate's perceived self-competence was the only factor directly related to task enjoyment (Harackiewicz & Larson, 1986). This experiment used both rewards and verbal feedback to elicit changes in intrinsic motivation.

Feedback as an independent variable may be characterized by its content or source. The content of verbal feedback is considered for experimental purposes to be either informational or controlling. Research has shown

that informational and controlling verbal feedback may differentially affect intrinsic motivation by acting primarily upon perceived self-determination (Ryan, 1982). Because perceived self-determination is the more fundamental process, and perceived competence can only affect intrinsic motivation when behavior is seen as self-determined, informational or controlling verbal feedback manipulations produce more consistent and stronger experimental results than do manipulations of feedback source variables (Ryan, 1982). The source variables manipulated by Ryan (1982) were self-administered versus experimenter-administered feedback. The results indicated that controlling feedback (whether self- or other-administered) would lead to a greater decrement in intrinsic motivation relative to the informational feedback condition. Additionally, the results showed that feedback given by an external source (whether informational or controlling) leads to a greater decrement in intrinsic motivation compared to self-administered feedback.

The present research attempted to build closely upon the results of Ryan (1982). Informational and controlling components were included as the feedback content dimension. Instead of using a feedback source dimension,

however, this research introduced feedback referent as the other manipulation. The research by Ryan indicated that feedback provided by an external source (the experimenter) would cause a greater decrement in intrinsic motivation than would feedback provided by an internal source (the subject himself). In the present study, the formal source of the feedback was external (given by the experimenter). This feedback from the experimenter was administered in two conditions. One condition involved self-referenced (idiographic) feedback, while the other was group-referenced (normative) feedback.

The use of feedback referent as an independent variable is important for two reasons. First, most externally given feedback is either self-referent or other-referent, yet this characteristic of feedback has not been widely studied and has never been applied to the intrinsic motivation paradigm. Second, feedback referent may be found to influence perceptions of causality and intrinsic motivation within subjects. Such a finding would suggest that feedback delivery could be modified to enhance causality perceptions and intrinsic motivation in more generalized settings. More research would be needed to substantiate the nature and limits of this generalizability.

Research to date has used both normative and idiographic feedback conditions, but in no instance have these two referents been compared in the intrinsic motivation research. This study attempted to assess whether subjects perceive differences between self-referent and other-referent verbal feedback from the experimenter, and whether this perception influences their perceived locus of causality and intrinsic motivation. Research has already shown that subjects will perceive differences in self-administered and other-administered feedback (Ryan, 1982). It is clear that perceptions of feedback source can affect intrinsic motivation in the undermining effect paradigm. The present experiment took this finding one step further in assessing how feedback referent affects perceptions of locus of causality and intrinsic motivation. Research has verified that feedback from an external source decreases internal perceptions of causality relative to feedback which is self-selected. This study focused exclusively upon feedback which has an external source (the experimenter). It has been shown that subjects in a performance situation will generate internalized, self-administered feedback, however, research has shown that this feedback will influence the subject primarily when no formal external feedback is available (Iverson & Reuder, 1956). When external feedback

is available, subjects will use that information as indicative of their competence and degree of self-determination. External feedback was provided to all subjects in this experiment, either in the idiographic or normative form. Any differences in perceptions of competence and self-determination should have arisen from the differences in the external feedback, and not from self-administered feedback. The characteristics of external feedback which could influence perceptions of causality are of importance in this experiment. Feedback referent is one component of external feedback which could have a bearing on causality perceptions. Since feedback referent has not been studied as a possible influence upon perceptions of locus of causality and intrinsic motivation, it is difficult to speculate whether the effects of referent will have sufficient magnitude to overshadow the effects of an external feedback source. This study was designed to explore the effects of referent within the context of externally given feedback in an attempt to discern if feedback referent can be perceived independent of feedback source, and if this perception can guide perceptions of causality and intrinsic motivation.

Another reason that feedback referent should be studied is that it may have practical significance.

Frequently, task performance feedback is given externally, (by supervisors, teachers, peers, etc.). Employees are not generally allowed to self-select their performance feedback. Thus it is desirable to study characteristics of feedback within the external feedback source dimension. One characteristic of external feedback which varies widely in the workplace is the feedback referent. Employee performance may be compared to the performance of others or to the employee's own past performance. Which referent is used depends upon a number of factors, such as whether the job necessitates the use of special skills, abilities, etc. In some cases, managerial style or tradition will dictate which type of feedback referent is used. The present study would be useful in a practical sense if it shows that use of a particular feedback referent might undermine a subject's perception of self-determination and intrinsic motivation. Obviously more direct organizational research would be necessary before such findings could be generalized to employees on a job.

This study addressed the nature of the relationship between feedback referent and feedback content. Feedback content may be either informational or controlling. If it is controlling, subjects will exhibit the undermining effect when performing an initially intrinsically

motivating task. Research has shown that this effect is due to a shift in perceived locus of causality. It is predicted that feedback referent will operate in the same manner in this paradigm. Normative feedback should induce a shift toward external locus of causality relative to idiographic feedback.

Purpose of the Study

As research cited above has indicated, the content dimension of verbal feedback can influence the manifestation of the undermining effect. This research tested whether a subject's perception of the feedback referent also affects intrinsic motivation. This study attempted to show how perceived feedback referent influences perceived self-determination and intrinsic motivation.

Feedback referent was manipulated using either idiographic (self-referenced) or normative (other referenced) conditions. Feedback content was manipulated using informational or controlling conditions.

Hypotheses

1. Subjects receiving controlling feedback will experience a shift to external locus of causality relative to subjects receiving informational feedback.

2. Subjects receiving normative feedback will experience a shift to external locus of causality relative to subjects receiving idiographic feedback.

3. Subjects receiving controlling feedback will consider the task to be less intrinsically motivating relative to subjects receiving informational feedback.

4. Subjects receiving normative feedback will consider the task to be less intrinsically motivating relative to subjects receiving idiographic feedback.

Chapter 2

METHOD

Design

This study consisted of a 2X2 factorial design, which crossed two discrete levels of feedback content variables (informational/controlling) and two discrete levels of feedback source variables (idiographic/normative). Mean group comparisons were made among the four condition combinations on the two dependent variables, locus of causality, and task interest.

Subjects

Eighty undergraduate students were given the experimental treatments. These participants performed the experimental tasks with the knowledge that they would receive extra credit points for their psychology classes. It was not expected that the desire for extra credit points differentially affected the performance of the groups since all subjects received the extra credit. Forty-seven females and thirty-three males completed the experiment. Each subject received a treatment based upon the roll of a die, using digits 1 through 4 to denote

treatments. When the digits 5 or 6 appeared, the die was rolled again until a digit 1 through 4 appeared. Cells were filled in this manner until a cell was full. At that point each incoming subject was assigned to the first non-filled treatment cell which appeared on the die. Each subject appeared for the experimental session in the order of their preference on the sign up sheet.

Task

The task consisted of embedded figures puzzles featuring the name "NINA" hidden in a drawing. This task was selected because it has been used in research in the past and has been shown to be intrinsically motivating (Harackiewicz, 1979; Harackiewicz & Larson, 1986; Ryan, 1982). Each puzzle sheet contained pen and ink drawings of three scenes from Broadway theatrical productions. Each of the three drawings on a sheet had a title beneath it explaining the name of the production and the characters depicted. Three sheets were used for the initial measure, and three different depictions were used for the free-choice measure. The two puzzle sets were never mixed, and all sheets were administered to all subjects in the same order.

Pretest

The Group Embedded Figures Test, (GEFT) (Oltman, Witkin, Raskin, & Karp, 1971) was administered to all subjects as a pretest. The true purpose of the pretest was not discussed with the subjects. The pretest was given only to induce subjects to feel that the subsequent verbal feedback would be legitimate and based upon a sample of their performance. The actual performance of the subjects on the pretest was not calculated. All subjects were given performance feedback indicating a 75% success ratio. The experimental manipulation consisted of the manner in which this success ratio information was presented. Although the GEFT has not been shown to measure abilities which are instrumental in solving the NINA puzzles, it appeared to possess adequate face validity since figure-ground discriminations are major components of each task. The feedback given to subjects in the manipulation scripts was designed to appear as a comparison of their first NINA puzzle performance to the GEFT scores.

Independent Variables

Two independent variables were manipulated in this procedure. First feedback content was manipulated. Subjects were given feedback that was purely indicative of

their performance (informational conditions) or as a critical evaluation of their level of performance (controlling conditions). Scripts were employed to induce these perceptions (Appendix G). The first sentence of the manipulation scripts involved feedback content. Subjects in the informational feedback conditions, conditions 1 and 2, were told exactly how many of the hidden words "NINA" they circled correctly on the first NINA puzzle set. Subjects in the controlling feedback conditions were not given any information about how many "NINA'S" they correctly found on the first puzzle set. To further differentiate "control" from "information", an evaluative statement was added to the controlling feedback conditions, conditions 3 and 4. The evaluative statement read, "This is an impressive score, but you could have found even more NINAS."

Secondly, feedback referent was manipulated. Feedback was designed to induce subjects to perceive that the experimenter-administered feedback was relative to their own initial performance (idiographic condition) or relative to the performance of a group (normative condition). This was accomplished in the idiographic conditions, conditions 1 and 3, by the use of the sentence, "Based upon your pretest score which is related

to performance on the NINA puzzles, you found up to 75% of the NINAS predicted." In the normative conditions, conditions 2 and 4, the sentence read, "Your score indicates that you found more NINAS than 75% of the subjects who have completed the experiment."

Dependent Variables

Perceived Self-Determination was measured in this experiment with a scale developed to assess causality. This scale consists of three subscales which address three separate dimensions of causality. The dimension of interest in this experiment is internality/externality, and involves items one, five, and seven on the scale. These items are intended to assess whether subjects attribute their performance to internal or external causes. Items two, four, and nine assess the degree to which subjects felt that control or lack of control existed with respect to their experimental performance. Items three, six, and eight address the issue of stability. The instructions on this scale were changed to make each subject aware that their responses should be made with NINA puzzle performance in mind. Scores on this scale were obtained by summing across items one, five, and seven, then dividing by three to obtain the mean. Although subjects filled out the other items, only scores on the

internality/externality dimension were calculated since they corresponded most nearly to the dependent variable of perceived self-determination. A copy of this scale appears as Appendix A, (Russell, 1982).

Intrinsic Motivation: Intrinsic motivation was to be measured directly by allowing the subjects a free-choice period during which they were free to choose to continue performing the experimental task or to perform some other available alternative. In this experiment the behavioral dependent measure was the number of NINAs found by subjects in each of the treatment conditions during the six minute free-choice period.

Task Interest: A task interest measure was used to approximate intrinsic motivation as a construct. This measure consisted of six 7-point scale items each with additudinally contrasted anchors. In addition the instructions to the scale asked subjects to indicate their reactions to the "NINA" puzzle task. Prior to scoring, items 2, 4, and 6 were reversed, then the results were obtained by averaging across the six items to form a composite score; the highest numerical values represented the highest rated interest. This measure was developed by Mayo (1977). A copy of this scale can be found in Appendix B.

Manipulation Checks

A manipulation check was used to address the level of perceived control the subjects felt in the feedback conditions. These appear as the first two items in Appendix C. The final two items of Appendix C were designed to assess the subjects' perception of feedback referent. Another manipulation check was employed to ensure that competence perceptions were not differentially affected by the four feedback conditions. Competence perceptions were measured with the Scott Morale Scale (Scott, 1967). This measure has been used previously in CET research (Phillips & Lord, 1980). The manipulation check for perceived competence appears in Appendix D.

Procedure

Because of the nature of the verbal feedback administration, the experimenter ran each subject individually. The presence of multiple subjects might have created a variety of group processes which would have had detrimental influences on puzzle performance and on the responses given on the measurement devices.

The experimenter welcomed each subject into the room and directed him or her to a seat. At this point the subject was given a consent form to read and inquire

about. The consent form was collected upon signing (Appendix E). Next the nature of the experiment was outlined, using the script provided in Appendix F.

The subject was given the Group Embedded Figures Test, and was allowed three minutes to complete both sections of the booklet. The experimenter left the room and returned after three minutes, informing the subject to stop working. The experimenter informed each subject before starting that he would leave the room for a short while. Subjects were not told how long since this might make time constraints salient and they would have been more likely to perceive time limits as a form of external control. The experimenter avoided mentioning the specific time of his absences throughout the procedure. Next, the experimenter collected the GEFT materials and handed out the first set of "NINA" puzzles.

The experimenter delivered the materials to the subject in accordance with directions specified in the script. The experimenter also gave each subject a sample "NINA" puzzle, and asked each subject to show how to find and circle the stimulus items.

The subject was given a colored marker and was asked to circle all of the "NINAs" in the puzzle set.

The experimenter exited the room for three minutes and allowed the subject to work on the puzzles. Upon his return, the experimenter informed the subject that he would check solutions of the puzzles. This process was conducted in the room, but subjects were not directly observed while working.

Immediately after counting the number of "NINA'S" circled, the experimenter administered one of the four feedback conditions which was predetermined by the toss of a die. The feedback conditions appear in Appendix G.

The subject was informed that the experimenter must leave the room to input the puzzle results. The true reason the experimenter left the room is to avoid additional perceptions of control which could result from his surveillance of performance, an effect which was first shown by Lepper and Greene in 1975. The experimenter then left the subject alone in the room with several magazines and a set of NINA puzzles placed purposely on the table in front of the subject. The magazines were laid flat and fanned out with the free-choice "NINA" puzzles clearly interspersed between the top and next lowest magazine so that part of the drawings were visible. This configuration was present throughout the entire experimental procedure. The magazines which were used as alternative stimuli to

the "NINA" puzzles were People, Sports Illustrated, Time, and Psychology Today.

After the six minute free-choice period had elapsed, the experimenter returned to the room and instructed the subject to fill out the questionnaires (Appendices A, B, C, & D). The experimenter remained in the room during this process but did not speak to the subject during this time. The questionnaires were collected by the experimenter, along with the free-choice "NINA" puzzle packet from the table.

To complete the process, the subject was debriefed, and asked to keep the procedure secret. Next subjects were given an extra credit card, and thanked by the experimenter for participating. The debriefing script appears in Appendix H.

Chapter III

RESULTS

Reliability of Dependent Measures

Table 1 shows the coefficient alpha reliability data for the paper and pencil dependent measurement scales. Coefficient alpha was employed as a measure of internal consistency. This method is recommended by Nunnally (1978), in cases where each subject will utilize the measurement scale only once and alternate forms are not available. No reliability estimate could be calculated for the behavioral task interest measure since the free-choice puzzle performance constitutes a single item.

Table 1
Coefficient Alpha Reliability Estimates for
Dependent Measure Scales

Dependent Measures	Reliability
Task Interest (Self-Report)	0.84
Internality/Externality (LOC)	0.81

Manipulation Checks

An analysis of variance was done to determine if the manipulations had any effect on the manipulation check scales. Results of this analysis appear in Table 2. It appears that subjects were made aware of feedback referent ($M=5.95$ in the idiographic and $M=1.77$ in the normative conditions; $F(1,79)=141.267$, $p<.05$). It appears that subjects were not influenced by the feedback content manipulation as intended.

Table 2
Analysis of Variance Table for Manipulation
Check Variables

Source of Variation	Feedback Referent			
	SUMSQ	DF	MSQ	F

Main Effects	354.125	2	177.063	71.750
Feedback Content	5.513	1	5.513	2.234
Feedback Referent	348.613	1	348.613	141.267*
2-Way Interactions	7.813	1	7.813	3.166
Content X Referent	7.813	1	7.813	3.166
Explained	361.938	3	120.646	48.889
Residual	187.550	76	2.468	
Total	549.488	79	6.956	

Table 2 (Continued)

Feedback Content

Source of Variation	SUMSQ	DF	MSQ	F

Main Effects	.625	2	.313	.118
Feedback Content	.013	1	.013	.005
Feedback Referent	.613	1	.613	.231
2-Way Interactions	.113	1	.113	.042
Content Referent	.113	1	.113	.042
Explained	.738	3	.246	.093
Residual	201.950	76	2.657	
Total	202.687	79	2.566	

Table 3 involves perceived competence. The perceived competence measure should not exhibit significant differences across cells, since feedback was purposely designed to be success feedback and all subjects were given the same success ratio. The analysis of variance in Table 3 shows that the perceived competence of subjects was not significantly altered by the feedback inductions. Thus it can be concluded that there were no significant differences in task competence across the feedback conditions.

Table 3
Analysis of Variance for
Perceived Task Competence

Source of Variation	SUMSQ	DF	MSQ	F

Main Effects	53.825	2	26.913	.580
Feedback Content	1.013	1	1.013	.022
Feedback Referent	52.813	1	52.813	1.139
2-Way Interactions	21.012	1	21.012	.453
Content Referent	21.012	1	21.012	.453
Explained	74.837	3	24.946	.538
Residual	3524.850	76	46.380	
Total	3599.688	79	45.566	

Tests of Hypotheses

The means and standard deviations for the dependent measures appear in Table 4. Hypothesis 1 stated that subjects who received controlling feedback would experience a shift to external locus of causality relative to subjects who received informational feedback. No significant shift is indicated in the causality data which appears in Table 5. No decisions can be clearly drawn from these data, however, due to problems with the manipulation and procedure. These will be addressed at length in the discussion.

Hypothesis 2 stated that subjects who received normative feedback would experience a shift to external locus of causality relative to subjects who received idiographic feedback. The analysis of variance for the internality/externality dimension of causality appears in Table 5. Again we see no significant effects. As was the case with Hypothesis 1, it is likely that flaws in the design of the feedback render any support or lack thereof scientifically untenable.

Table 4
Means and Standard Deviations of Self-reported
Task Interest, Behavioral Task Interest, and LOC
By Treatment

	Task Interest (Self-Reported)		Task Interest (Behavioral)		LOC (Internal/External)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Feedback						
Info/Idio	32.80	5.827	13.00	2.828	4.33	1.04
n=20						
Info/Norm	32.05	6.039	11.50	2.121	4.37	1.53
n=20						
Cont/Idio	31.90	5.190	6.00	0.0	4.47	1.51
n=20						
Cont/Norm	31.20	5.782	9.00	0.0	4.22	1.05
n=20						

a Higher Means=Higher Rated Interest

b Higher Means=More NINA's circled during free-choice period

c Higher Means Indicate Internality

Table 5
 Analysis of Variance Table for Locus of Causality
 (Internality/Externality Dimension Only)

Source of Variation	SUMSQ	DF	MSQ	F
Main Effects	1.291	2	.645	.371
Feedback Content	.040	1	.040	.023
Feedback Referent	1.250	1	1.250	.719
2-Way Interactions	.050	1	.050	.029
Content Referent	.050	1	.050	.029
Explained	1.341	3	.447	.275
Residual	132.179	76	1.739	
Total	133.520	79	1.690	

Hypothesis 3 stated that subjects who received controlling feedback would consider the task to be less intrinsically motivating relative to those subjects who received informational feedback. Due to the small number of subjects who completed the free-choice materials ($n=6$), the results in Table 6 are not valid but are reported here as a matter of course.) The means are shown in Table 4. The analysis of variance appearing in Table 7 shows no significant difference between the effects of the informational and controlling manipulations on reported task interest.

Hypothesis 4 stated that subjects who received normative feedback would consider the task to be less intrinsically motivating relative to subjects receiving idiographic feedback. Table 7 reveals no significant differences in rated task interest perceptions between subjects receiving normative or idiographic feedback. (As was emphasized in the discussion of hypothesis 3, no conclusion could be drawn from the behavioral measure of task interest due to the small number of subjects who participated.)

Table 6
 Analysis Of Variance Table For
 Behavioral Measure Of Task Interest
 (With Ninas Found During Free-Choice Period
 As The Dependent Variable)

Source of Variation	SUMSQ	DF	MSQ	F

Main Effects	30.083	2	15.042	2.407
Feedback Content	30.083	1	30.083	4.813
Feedback Referent	.000	1	.000	.000
2-Way Interactions	6.750	1	6.750	1.080
Content Referent	6.750	1	6.750	1.080
Explained	36.833	3	12.278	1.964
Residual	12.500	2	6.250	
Total	49.333	5	9.867	

Table 7
 Analysis Of Variance Table
 With Rated Task Interest As The
 Dependent Variable

Source of Variation	SUMSQ	DF	MSQ	F

Main Effects	25.825	2	12.913	0.395
Feedback Content	15.313	1	15.313	0.468
Feedback Referent	10.513	1	10.513	0.321
2-Way Interactions	0.013	1	0.013	0.000
Content Referent	0.012	1	0.012	0.000
Explained	25.837	3	8.612	0.26
Residual	2485.150	76	32.699	
Total	2510.988	79	31.785	

Correlation Analysis

Due to the overall lack of significant effects, a correlation analysis was conducted to search for trends between any of the experimental variables. The results of this analysis appear in Table 8. No significant correlations appeared between the variables addressed here. Due to the lack of subject response, no correlations were reported using the behavioral task-interest measure.

Table 8

Correlation Analysis of Manipulation
Check Measures with Dependent Measures
And Dependent Measures with Each Other

	M.C. Control	M.C. Referent	Rated Interest	Causality Int./Ext.
M.C. Control	1.00	----	.1485	.2235
M.C. Referent	----	1.00	.0714	.1229
Rated Interest	----	----	1.00	.0942

Chapter IV

DISCUSSION

The purpose of this study was to investigate what effects feedback content (informational or controlling) and feedback referent (idiographic or normative) would have on intrinsic motivation. The results appear not to support the hypotheses, however, several methodological problems undoubtedly have disturbed the inferential base. As a consequence we can draw neither confirming nor disconfirming inferences about the hypotheses in question.

Methodological Problems

It is apparent from the statistical test on the manipulation checks that the informational/controlling feedback manipulation was not perceived as intended. It is possible that the wording of the manipulation was weak and that the feedback induction should be made more strongly controlling in order to generate the desired perceptions in the subjects and cause any differential impact on both the manipulation check and the task interest dependent variable. This study fails to replicate the results of Ryan (1982) who found that these feedback content dimensions cause shifts in task interest and intrinsic motivation. There are several

possible reasons why subjects did not respond to these manipulations as did the subjects in Ryan's experiment. The most plausible is that the subjects simply did not perceive the controlling manipulation because it lacked sufficient strength. Previous studies utilizing verbal feedback to induce perceptions of control have relied on the use of an evaluative statement. This method was attempted here with the use of the statement "This was an impressive score but you could have done even better". Apparently this statement was not sufficiently controlling. Additionally, since the feedback induction was a small part of the entire script it is possible that the feedback was not emphasized enough while being presented. Another possibility which may have caused failure to perceive the feedback content manipulation is that the feedback may have been confusing to the subjects. Subjects in the informational conditions were provided directly with the number of correct puzzle solutions, while subjects in the controlling conditions were given only percentage of success information. It is likely that these subjects were confused by the percentage information which might have distracted them from attending to the intended purpose of the manipulation script. Proper pilot testing with the manipulation scripts would have illuminated this failure of subjects to respond to the control induction. Had this procedure been properly pilot tested it would have been

possible to rewrite the controlling feedback scripts in order to ensure that the control induction was salient to the study participants and was of sufficient magnitude to produce the desired perceptions. Lastly, it is possible that the manipulation check itself may have inadequately assessed the subjects' reactions to the manipulation.

Separate studies by Harackiewicz (1979) and by Ryan (1982) represent virtually all of the intrinsic motivation research specifically employing verbal feedback as the manipulation. The remaining majority of intrinsic motivation research employs nonverbal feedback commonly in the form of rewards. It is evident from studies which rely on verbal feedback that the wording of the message must be carefully designed to evoke the desired perceptions within study participants. As was pointed out in the literature review portion of this paper, the characteristic of verbal feedback which has shown reproducible results thus far is the controlling/informational content dimension. Clear consensus has not yet evolved over the influence of other feedback characteristics such as source or referent upon task interest and intrinsic motivation. Obviously it is extremely important to ensure that subjects perceive the desired manipulations before any conclusions can be drawn about their influences upon the dependent variables. This is especially true when

the independent variables being manipulated are known to be particularly fickle, as the verbal feedback variables have been in past research. In the design of this procedure, the attempt to replicate Ryan's control manipulation by using virtually the same evaluative statement he used was not effective because the experimenter overlooked the unpredictable nature of this verbal manipulation. It is obvious from the failure of this manipulation to influence subjects' perceptions that a manipulation which is effective in one experiment will not necessarily be effective in another similar experiment. Pilot testing would have shown whether or not subjects perceived the variables as intended.

Another serious methodological flaw in this study involved the use of NINA puzzles as dependent measures during the free-choice period. It is apparent from the debriefing sessions that the experimenter did not make it clear to the subjects that they had the choice to work on the free-choice NINA puzzles or the alternative stimuli. During the debriefing sessions subjects expressed several reasons for not completing the free-choice puzzles. Subjects suggested that since they were not told that they could work on the puzzles they felt that they shouldn't, either because the puzzles were not their property, or that perhaps the puzzles might be for use later in the procedure when the experimenter

returned. It is apparent that the subjects must be clearly told that they may work on the free-choice puzzle set or can choose from the alternative materials. Six subjects out of the eighty tested actually did find additional NINAs in the free-choice period although none were prompted that they were free to specifically do the puzzles. Eighteen subjects verbally expressed interest in the NINA puzzles during the debriefing interview. This expressed interest indicates that subjects did find the puzzle materials interesting, and it further emphasizes the need in this sort of research to clearly give the subjects a choice among all of the alternative stimuli.

Ryan's 1982 experiment employed the free-choice period with greater success. It is likely that Ryan specifically informed subjects prior to the free-choice period that they could work on the NINA puzzles or read the magazines, although journal articles concerning the procedure did not specifically report the use of such prompts. Again, pilot testing would have indicated existing problems with the behavioral free-choice measure and would have clearly shown the effectiveness of the dependent measure characteristic used (i.e., time, number of solutions, etc.).

Considerations for Future Research

The failure to find the predicted shifts in rated task interest (hypotheses 3 and 4) can most likely be attributed to the lack of a shift in any of the precursor variables (i.e., perceived competence and locus of causality). Because of problems in the methodology it is not possible to draw inferences about why these precursor variables did not shift differentially with respect to the various treatment conditions. It is apparent that the present experiment could be given scientific rigor by changing the manipulation scripts in several ways. The controlling induction needs to be strengthened so that pilot testing would indicate that subjects do perceive a difference between the informational and controlling verbal feedback. It would also be beneficial to eliminate the percentage of success information from the scripts in order to minimize the confusion that subjects might experience.

The other major improvement which is warranted in any attempt to redesign this experiment once the manipulation feedback inductions have been pilot tested and corrected is for the experimenter to inform all subjects prior to the free-choice period that they are free to work on the NINA puzzles or to read the magazines while he is away. This will ensure that subjects know that the extra puzzle sets are

available to them. It is apparent from the debriefing in this study that many subjects did find the NINA puzzles interesting and would have been likely to solve them during the free-choice period had they been given permission.

Previous research has shown that the content of verbal feedback does have an effect upon free-choice measures of intrinsic motivation. More research is needed to test the effects of such factors as feedback referent upon intrinsic motivation. It is apparent from this study that subjects can differentiate between idiographic or normative feedback referents. It remains to be seen whether or not this ability to discriminate between referents has any influence upon perceived competence, perceived self-determination, and intrinsic motivation.

References

- Bem, D.J. (1972). Self-perception theory. In L. Berkowitz(Ed.), Advances in experimental social psychology. (Vol. 6, pp. 1-62). New York:Academic Press.
- de Charms, R. (1968). Personal causation: The internal affective determinants of behavior. New York: Academic Press.
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. Journal of Personality and Social Psychology, 18, 105-115.
- Deci, E. L. (1975). Intrinsic motivation. New York: Plenum.
- Deci, E. L. (1976). Notes on the theory and meta-theory of intrinsic motivation. Organizational Behavior and Human Performance, 15, 130-145.

Deci, E. L., & Ryan, R. M. (1980). The empirical exploration of intrinsic motivational processes. In L. Berkowitz(Ed.) Advances in experimental social psychology. (Vol. 13, pp. 39-80). New York: Academic Press.

Dollinger, S. J., & Thelen, M. H. (1978). Overjustification and children's intrinsic motivation: Comparative effects of four rewards. Journal of Personality and Social Psychology, 36, 1259-1269.

Fisher, C. D. (1978). The effects of personal control, competence, and extrinsic reward systems on intrinsic motivation. Organizational Behavior and Human Performance, 21, 273-288.

Harackiewicz, J. M. (1979). The effects of reward contingency and performance feedback on intrinsic motivation. Journal of Personality and Social Psychology, 37, 1352-1363.

Harackiewicz, J. M., & Larson, J. R., Jr., (1986).

Managing motivation: The impact of supervisor feedback on subordinate task interest. Journal of Personality and Social Psychology, 51, 547-556.

Harackiewicz, J. M., Sansone, C., & Manderlink, G.,

(1985). Competence, achievement orientation, and intrinsic motivation: A process analysis. Journal of Personality and Social Psychology, 48, 493-508.

Hunt, J.M. (1957). Intrinsic motivation and it's role

in psychological development. In D. Levine(Ed.),

Nebraska Symposium on Motivation. (Vol. 13, pp.189-282). Lincoln: University of Nebraska Press.

Iverson, M. A., & Reuder, M. E. (1956). Ego involvement

as an experimental variable. Psychological Reports, 2, 147-181.

- Karimol, R., & Ross, M. (1977) The effect of performance-relevant and performance-irrelevant rewards on children's intrinsic motivation. Child Development, 48, 482-487.
- Kruglanski, A. W., Freedman, I., & Zeevi, G. (1971). The effects of extrinsic incentives on some qualitative aspects of task performance. Journal of Personality, 39, 606-617.
- Lepper, M. R., & Greene, D. (1975). Turning play into work: Effects of adult surveillance and extrinsic rewards on children's intrinsic motivation. Journal of Personality and Social Psychology, 31, 479-486.
- Lepper, M. R., & Greene, D. (1976). On understanding "overjustification": A reply to Reiss and Sushinsky. Journal of Personality and Social Psychology, 33 25-35.

Lepper, M. R., Greene, D., & Nisbett, R. E., (1973).

Undermining children's intrinsic interest with extrinsic reward: A test of the "overjustification" hypothesis.

Journal of Personality and Social Psychology,
28, 129-137.

Mayo, R. J. (1977). The development and construct validation of a measure of intrinsic motivation.

(Doctoral dissertation, Purdue University, 1977).

Dissertation Abstracts International, 37, 5417B-5418B.

Mossholder, K. W. (1980). Effects of externally mediated goal setting on intrinsic motivation: A laboratory experiment. Journal of Applied Psychology, 65, 202-210.

Nunnally, J. C. (1978). Psychometric theory.

New York: McGraw-Hill.

Oltman, P. K., Raskin, E., & Witkin, H. A. (1971).

The group embedded figures test. Palo Alto:
Consulting Psychologists Press.

Phillips, J. S., & Lord, R. G. (1980). Determinants of
intrinsic motivation: Locus of control and competence
information as components of Deci's cognitive evaluation
theory. Journal of Applied Psychology,
65. 211-218.

Piaget, J. (1952). The origin of intelligence in
children. New York: International Universities Press.

Pittman, T. S., Davey, M. E., Alafat, K. A., Wetherill,
K. V., & Kramer, N. A. (1980). Informational versus
controlling verbal rewards. Personality and Social
Psychology Bulletin, 6, 228-233.

- Pritchard, R. D., Campbell, K. M., & Campbell, D. J. (1977). Effects of extrinsic financial rewards on intrinsic motivation. Journal of Applied Psychology, 62, 9-15.
- Reiss, S., & Sushinsky, L. W. (1975). Overjustification, competing responses, and the acquisition of intrinsic interest. Journal of Personality and Social Psychology, 31, 1116-1125.
- Ross, M. (1975). Salience of reward and intrinsic motivation. Journal of Personality and Social Psychology, 32, 245-254.
- Russell, D. (1982). The Causal Dimension Scale: A measure of how individuals perceive causes. Journal of Personality and Social Psychology, 42, 1137-1145.
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. Journal of Personality and Social Psychology, 43, 450-461.

Ryan, R. M., Mims, V., & Koestner, R. (1983). Relation of reward contingency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory. Journal of Personality and Social Psychology, 45, 736-750.

Swann, W. B., & Pittman, T. S. (1977). Initiating play activity of children: The moderating influence of verbal cues on intrinsic motivation. Child Development, 48, 1128-1132.

White, R. W. (1959). Motivation reconsidered: The concept of competence. Psychological Review, 66, 297-333.

APPENDIX A

Instructions: Think about the reason(s) for your performance on the NINA puzzles. The items below concern your impressions of the cause or causes of your performance. Circle one number for each of the following scales.

1. Is the cause(s) something that:
Reflects an aspect of yourself 7 6 5 4 3 2 1 Reflects an aspect of the situation
2. Is the cause(s):
Controllable by you or by others 7 6 5 4 3 2 1 Uncontrollable by you or others
3. Is the cause(s): something that is:
Permanent 7 6 5 4 3 2 1 Temporary
4. Is the cause(s): something:
Intended by you or other people 7 6 5 4 3 2 1 Unintended by you or other people
5. Is the cause(s): something that is:
Outside of you 1 2 3 4 5 6 7 Inside of you
6. Is the cause(s): something that is:
Variable over time 1 2 3 4 5 6 7 Stable over time
7. Is the cause(s):
Something about you 7 6 5 4 3 2 1 Something about others
8. Is the cause(s) something that is:
Changeable 1 2 3 4 5 6 7 Unchangeable
9. Is the cause(s) something for which:
No one is responsible 1 2 3 4 5 6 7 Someone is Responsible

APPENDIX B

INSTRUCTIONS: Think of the puzzles you just completed. Rate this task by circling one number on each scale below.

The "NINA" puzzle task was:

Extremely Interesting	1	2	3	4	5	6	7	Extremely Uninteresting
--------------------------	---	---	---	---	---	---	---	----------------------------

Extremely Unsatisfying	1	2	3	4	5	6	7	Extremely Satisfying
---------------------------	---	---	---	---	---	---	---	-------------------------

Extremely Enjoyable	1	2	3	4	5	6	7	Extremely Unenjoyable
------------------------	---	---	---	---	---	---	---	--------------------------

Extremely Boring	1	2	3	4	5	6	7	Extremely Exciting
---------------------	---	---	---	---	---	---	---	-----------------------

Extremely Challenging	1	2	3	4	5	6	7	Extremely Tedious
--------------------------	---	---	---	---	---	---	---	----------------------

Extremely Bad	1	2	3	4	5	6	7	Extremely Good
------------------	---	---	---	---	---	---	---	-------------------

APPENDIX C

INSTRUCTIONS; Please answer the following questions:

Your performance on the NINA puzzle task was intended to satisfy:

Your Desire To	-----	Your Desire To
Improve Your	1 2 3 4 5 6 7	Please The
Performance		Experimenter

The experimenter attempted to control your performance:

Always	-----	Never
	1 2 3 4 5 6 7	

The experimenter compared your performance to:

Your Own		The Performance
Performance	1 2 3 4 5 6 7	Of Others

Your performance on the NINA puzzles was compared to:

The Scores Of		Your Own Scores
Other People	1 2 3 4 5 6 7	On The Pretest
On The Pretest		

APPENDIX D

Instructions: Think of your competence finding the hidden words.
Rate how good you were at finding the "NINAS" by
circling the number which best describes your
performance.

My competence at the "NINA" puzzle task was:

Strong	1	2	3	4	5	6	7	Weak
Ineffective	1	2	3	4	5	6	7	Effective
Negative	1	2	3	4	5	6	7	Positive
Active	1	2	3	4	5	6	7	Passive
Successful	1	2	3	4	5	6	7	Unsuccessful
Skillful	1	2	3	4	5	6	7	Clumsy
Uncertain	1	2	3	4	5	6	7	Certain

APPENDIX E

INSERT CONSENT FORM COPY HERE

APPENDIX F

BASIC SCRIPT-

[BEFORE SUBJECT ENTERS THE ROOM, THE EXPERIMENTER WILL RANDOMIZE THE TREATMENT USING THE ROLL OF A DIE. THE SUBJECT WILL BE ASSIGNED A NUMBER CORRESPONDING TO HIS SEQUENCE IN THE EXPERIMENT. ALSO THE NUMBER OF HIS TREATMENT CONDITION AND THE DATE WILL BE RECORDED BY THE EXPERIMENTER PRIOR TO THE ENTRANCE OF THE SUBJECT INTO THE EXPERIMENTAL ROOM. ADDITIONALLY, IN ORDER TO PRESERVE THE SUBJECT'S ANONYMITY, THEY WILL NOT BE ASKED TO WRITE THEIR NAME ON ANY OF THE TEST MATERIALS, (EXCEPT FOR THEIR SIGNATURE ON THE CONSENT FORM). THE EXPERIMENTER WILL RECORD THEIR NAME ON A SEPARATE COMPUTER FILE IN ORDER OF THEIR SEQUENCE IN THE EXPERIMENT. THIS NUMBER WILL BE KNOWN AS THE SUBJECT I.D. NUMBER].

" Hello, my name is Kerry Sheehan. The purpose of this experiment is to determine if scores on the Group Embedded Figures Test could be predicted by your performance on a word search game. The first thing you will need to do is read and fill out this consent form.

[SUBJECT IS ALLOWED TIME TO COMPLETE FORM]

Do you have any questions concerning the consent form?"

[IF SUBJECT RESPONDS YES, ANSWER QUESTIONS, THEN CONTINUE]

[IF SUBJECT RESPONDS NO, CONTINUE]

"Here is the first set of materials. Use the figures on this form (Top Sheet) as guides. Try to find the basic forms from this top sheet in the subsequent problems. When you find them, outline the basic form on each problem and indicate which diagram it comes from by placing the appropriate letter below each problem like this."

[EXPERIMENTER GIVES EXAMPLE].

"Any questions?"

" I will leave the room for a few minutes, which should give you plenty of time to get through the materials. When I reenter the room, please continue to work until I tell you to stop."

"Ready?"

[EXPERIMENTER WAITS FOR SUBJECT'S AFFIRMATIVE RESPONSE]

[EXPERIMENTER LEAVES THE ROOM AND SETS THE STOPWATCH,

ALLOWING THE SUBJECT TO WORK ON THE GROUP EMBEDDED FIGURES TEST ITEMS. THE EXPERIMENTER REENTERS THE ROOM WHEN THE STOPWATCH READS THREE MINUTES AND SAYS:]

" Stop. Please give me the materials and I will hand out your second set of puzzles."

[EXPERIMENTER COLLECTS THE GROUP EMBEDDED FIGURES TEST AND HANDS OUT THE FIRST PACKET OF NINA PUZZLES]

"Now it's time for the second part of the experiment. These are "NINA" puzzles. Please find the hidden name "NINA" as many times as possible in each puzzle, and circle it like this."

[EXPERIMENTER GIVES THE STANDARD EXAMPLE TO THE SUBJECT]

"Again I will leave the room for awhile, so keep on working until I return and tell you to stop."

"Ready?"

[EXPERIMENTER WAITS FOR SUBJECT'S AFFIRMATIVE RESPONSE]

[EXPERIMENTER SETS THE STOPWATCH AS HE LEAVES THE ROOM SO THAT THE SUBJECTS MAY WORK ON THE NINA PUZZLES. HE MUST BE SURE TO TAKE THE COMPLETED GROUP EMBEDDED FIGURES TEST

ITEMS WITH HIM. THE EXPERIMENTER REENTERS THE ROOM WHEN THE STOPWATCH READS THREE MINUTES AND SAYS:]

"Stop. I will now look these over. Please wait a minute."

[THE EXPERIMENTER REMAINS IN THE ROOM AND CHECKS TO SEE HOW MANY NINAS HAVE BEEN FOUND BY THE SUBJECT. UPON COMPLETION OF THIS "SCORING" PROCESS THE EXPERIMENTER OFFERS ONE OF FOUR OF THE MANIPULATION SCRIPTS TO THE SUBJECTS]

{ Insert one of four manipulation scripts here. See Appendix G}.

"I need to take these scales into the office down the hall to input your data into the computer terminal, which should take just a few minutes. Please wait here while I do so."

[NEXT THE EXPERIMENTER LEAVES THE ROOM WITH THE COMPLETED NINA PUZZLES AND IMMEDIATELY CHECKS THE TIME AFTER STEPPING OUT OF THE ROOM. SUBJECTS WILL BE ALLOWED 6 MINUTES OF FREE CHOICE PERIOD, AT WHICH TIME THEY MAY WORK ON AN ADDITIONAL SET OF NINA PUZZLES, OR MAY READ SOME MAGAZINES WHICH HAVE BEEN LEFT ON THE TABLE IN FRONT OF

THEM]

[THE EXPERIMENTER REENTERS THE ROOM AFTER SIX MINUTES]

"Now I would like you to fill out some questionnaires concerning the two tasks you have worked on today."

[THE EXPERIMENTER HANDS OUT THE QUESTIONNAIRES.]

[THE EXPERIMENTER LETS THE SUBJECTS FILL OUT THE QUESTIONNAIRES WITHOUT CREATING ANY UNDUE SURVEILLANCE. HE SHOULD STAY SEATED AT OPPOSITE SIDE OF ROOM, AND ALLOW SUBJECTS AS MUCH TIME AS THEY NEED TO FILL OUT ALL OF THE SCALES. HE WILL ALSO INFORM THE SUBJECTS THAT THEY MAY ASK FOR CLARIFICATIONS CONCERNING THE SCALES].

[WHEN SUBJECTS ARE FINISHED FILLING OUT ALL OF THE SCALES, THE EXPERIMENTER WILL BEGIN THE DEBRIEFING. AT THIS POINT HE WILL EXPLAIN THE TRUE PURPOSE OF THE PROCEDURE AND WILL ANSWER ANY QUESTIONS THE SUBJECT MAY HAVE.]

APPENDIX G

Manipulation Scripts

Informational/Idiographic condition:

"You found _ NINAS. Based upon your pretest score which is related to performance on the NINA puzzles, you found up to 75% of the NINAS predicted.

Informational/Normative condition:

"You found _ NINAS. Your score indicates that you found more NINAS than 75% of the subjects who have completed the experiment."

Controlling/Idiographic condition:

"Based upon your pretest score which is related to performance on the NINA puzzles, you found up to 75% of the NINAS predicted. This is an impressive score, but you could have found even more NINAS."

Controlling/Normative condition:

"Your score indicates that you found more NINAS than 75% of the subjects who have completed the experiment. This is an impressive score, but you could have found even more NINAS.

APPENDIX H

DEBRIEFING SCRIPT:

" Your participation in the experiment is now complete. There are several things I need to tell you about."

" First of all, a cover story was utilized in this study. It was not the actual intent of this procedure to compare performance on the Group Embedded Figures Test with the performance on the NINA puzzles. The actual purpose of this experiment is to test the effects of different types of verbal feedback on your perceptions concerning the cause of your task performance and your interest in performing the task. You received the same performance feedback (75%) as did all other participants in this experiment. As you may have figured, the actual performance data from either of the tasks will not be used in the further analysis of the data. The only reason these tasks were given was to legitimize the feedback that I gave you."

" This experiment was designed to show how presentation of verbal feedback can be varied to affect people's perceptions of their task-related locus of

causality, and their intrinsic motivation (a construct quite similar to task enjoyment)."

" The cover story used in this experiment was necessary to make you believe that the feedback the experimenter gave you was genuine. Ideally, you used that feedback to form perceptions about the task and your proficiency at it. These perceptions should subsequently affect the responses you gave on the scales, and upon your behavior during the free-choice period. One scale was used to measure your locus of causality on the task, one was used to measure your task competence perceptions, and another attempts to assess your level of intrinsic motivation."

" It is important for you to understand that all of the feedback given to all subjects includes a 75% success ratio, which is in no way representative of your task performance on the Group Embedded Figures Test. This 75% figure is merely a convenient number for the experimenter to induce subjects to feel equally competent at the task. In reality, your performance on the Group Embedded Figures Test was never calculated, and your performance on the NINA puzzles will not be used."

" Do you have any questions concerning the nature of this study? Please ask if you do."

" Next I must ask you to keep the actual purpose of this research secret from other students. Knowledge of the purpose of this experiment would influence the results that subjects give. Should your friends or classmates ask what the experiment is about, I would appreciate your cooperation by telling them that the experiment is an attempt to equate performance ability on two hidden figures tasks."

" Do you have any questions concerning this request?"

" Finally I need to pass out extra credit cards and sign them."

" Thank you very much for your participation!!"